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# C++ Loops

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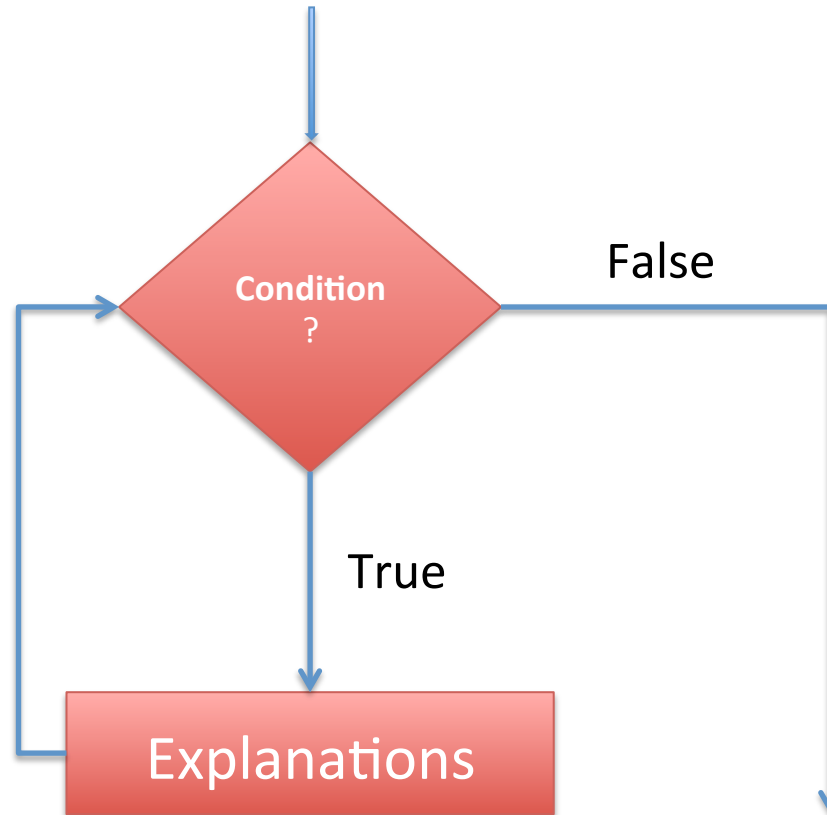
# C++ Loops

# while

Loops can execute a block of code as long as a specified condition is reached.

Loops are handy because they save time, reduce errors, and they make code more readable.

# *while* flow chart



## Ex-1: *while*

```
#include <iostream>
using namespace std;

int main() {
    int i = 0;
    while (i<5) {
        cout << i << "\n";
        i++;
    }
    return 0;
}
```



0  
1  
2  
3  
4

# do...while loop

- The do/while loop is a variant of the while loop.
- This loop will execute the code block once, before checking if the condition is true, then it will repeat the loop as long as the condition is true.

## Ex-2: Do/While

```
#include <iostream>
using namespace std;

int main() {
    int i = 0;
    do {
        cout << i << "\n";
        i++;
    }
    while (i<5);
    return 0;
}
```



0  
1  
2  
3  
4



## Ex-3: while

```
#include <iostream>
using namespace std;
/*This code calculates the factorial.*/
int main() {
    int i = 1, number;
    int factorial = 1;
    cout << "Enter number:";
    cin >> number;
    while (i <= number)
        {
            factorial *=i;
            i++;
        }
    cout << "Result:"
        << factorial
        << "\n";
    return 0;
}
```

- Enter number: 7
- Result: 5040

## *for loop*

When you know exactly how many times you want to loop through a block of code, use the for loop instead of a while loop:

Syntax:

```
| for (statement 1; statement 2; statement 3) {  
| //running code  
| }
```

## Ex-4: *for*

```
#include <iostream>
using namespace std;

int main() {
    for (int i = 0; i < 5; i++) {
        cout << i << "\n";
    }
    return 0;
}
```



0  
1  
2  
3  
4

## Ex-4: *for*

```
#include <iostream>
using namespace std;

int main() {
    for (int i = 0; i < 5; i++) {
        cout << i << "\n";
    }
    return 0;
}
```

1

2

3

0  
1  
2  
3  
4

## Ex-5: *for-2*

```
#include <iostream>
using namespace std;

int main() {
    for (int i = 0; i <= 30; i = i + 3) {
        cout << i << "\n";
    }
    return 0;
}
```

0  
3  
6  
9  
12  
15  
18  
21  
24  
27  
30

## Ex-6: *for-3*

```
// reverse counting
#include <iostream>
using namespace std;

int main ()
{
    for (int x=10; x>0; x--) {
        cout << x << ", ";
    }
    cout << "and zero\n";
}
```

10, 9, 8, 7, 6, 5, 4, 3, 2, 1, and zero